PB-251 174

STATE IMPLEMENTATION PLAN EMISSION REGULATIONS FOR SULFUR OXIDES: FUEL COMBUSTION

J. D. Crenshaw, et al

Environmental Protection Agency
Research Triangle Park, North Carolina

March 1976

DISTRIBUTED BY:

NTIS

National Technical Information Service
U. S. DEPARTMENT OF COMMERCE

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
EPA-450/2-76-002		

4. TITLE AND SUBTITLE	5. REPORT DATE
State Implementation Plan Emission Regulations for Sulfur Oxides: Fuel Combustion	March 1976
	6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.
Crenshaw, J. D., C. H. Kuo, J. D. Potter	
9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT NO.
U.S. Environmental Protection Agency Office of Air and Waste Management Office of Air Quality Planning and Standards Research Triangle Park, North Carolina 27711	11. CONTRACT/GRANT NO.
12. SPONSORING AGENCY NAME AND ADDRESS	13. TYPE OF REPORT AND PERIOD COVERED Final
	14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

16. ABSTRACT

This report presents a one-page summary of each state's implementation plan (SIP) regulations for sulfur oxides. The report also explains the relationship between the SIP regulations, the National Ambient Air Quality Standards, and the Federal Standards of Performance for New Stationary Sources, and briefly analyzes the various types of emission regulations which appear in the SIPs.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Sulfur dioxide Sulfur oxides Regulations Emission standards Fuel standards Standards	Air Pollution Control State Implementation Plans PRICES SUBJECT TO CHANGE	

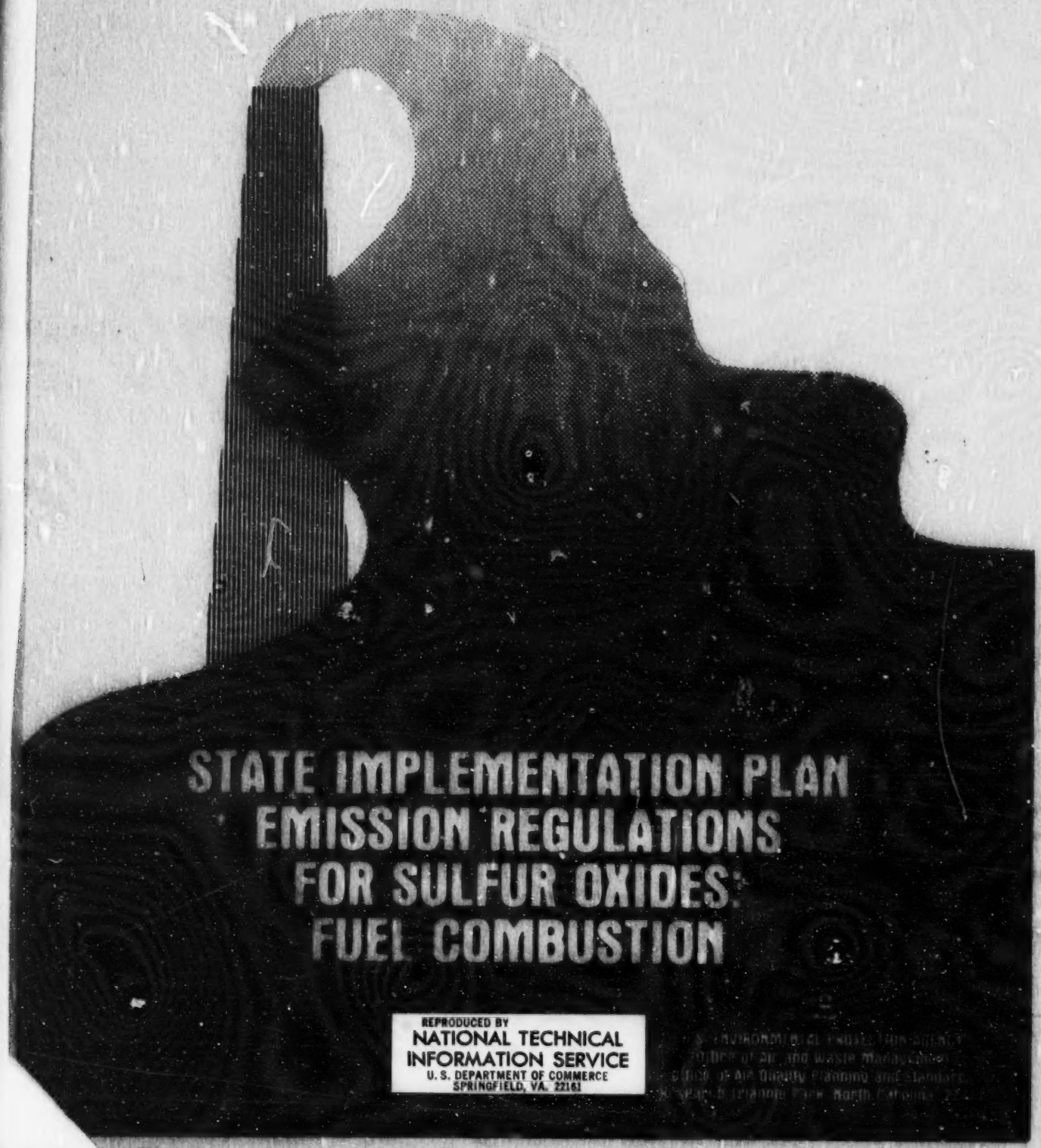
18. DISTRIBUTION STATEMENT	19. SECURITY CLASS (This Report)	21. NO. OF PAGES
Unlimited	Unclassified	82
	20. SECURITY CLASS (This page)	22. PRICE
	Unclassified	5.00 - 2.25

EPA Form 2220-1 (9-73)

096033

PB 251 174

EPA-450/2-76-002
March 1976



STATE IMPLEMENTATION PLAN EMISSION REGULATIONS FOR SULFUR OXIDES: FUEL COMBUSTION

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

EPA-450/2-76-002

STATE IMPLEMENTATION PLAN EMISSION REGULATIONS FOR SULFUR OXIDES: FUEL COMBUSTION

Strategies and Air Standards Division

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

March 1976

This report has been reviewed by the Strategies and Air Standards Division, Office of Air Quality Planning and Standards, Office of Air and Waste Management, Environmental Protection Agency, and approved for publication. Copies are available free of charge to Federal employees, current contractors and grantees, and non-profit organizations - as supplies permit - from the Air Pollution Technical Information Center, Environmental Protection Agency, Research Triangle Park, North Carolina, or may be obtained, for a nominal cost, from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161.

Publication No. EPA-450/2-76-002

ACKNOWLEDGEMENT

This report is a product of the Strategies and Air Standards Division of EPA's Office of Air Quality Planning and Standards (OAQPS). John Crenshaw coordinated the project and wrote the introductory sections of the report. Data collection was primarily the work of Dr. C. H. Kuo of Mississippi State University while on assignment to EPA. John Potter assisted in condensing the regulations and prepared the summary forms for each State. Mr. John Fink and Dr. Albert Wehe provided guidance throughout the project and Wanda Clayton provided clerical support. The report incorporates comments from other OAQPS divisions and from EPA's Division of Stationary Source Enforcement.

Table of Contents

	Page
Scope	v
Introduction	1
Background: National Ambient Air Quality Standards, State Emission Regulations, and Federal New Source Standards	3
Comparative Analysis of SO_2 Regulations	6
Sulfur Oxide Emission Regulations	11

APPENDICES

A. National Ambient Air Quality Standards
B. New Source Performance Standards for SO_2
C. Conversion Factors for SO_2 Emission Regulations

SCOPE

This report summarizes State Implementation Plan regulations on the emission of sulfur oxides from fuel combustion equipment. The definition of fuel combustion equipment varies slightly from state to state but, in all states, these regulations apply to steam-electric generating plants (power plants) and industrial boilers which burn fuel to generate power. In many cases, the regulations apply to all fuel users. The regulations generally do not apply to SO_2 emissions from incineration or industrial processes such as steel production or coking.

State Implementation Plans (SIP) are designed to prevent local ambient air concentrations from exceeding the National Ambient Air Quality Standards. In addition to SIP regulations, which are Federally approved and legally enforceable, some states, counties, or cities have adopted local SO_2 regulations which may be more stringent than SIP emission requirements. While fuel burning sources may be required to comply with these regulations, in most cases, local regulations are not included in this summary. Where local regulations do appear, they are clearly identified as such.

STATE IMPLEMENTATION PLAN EMISSION REGULATIONS FOR SULFUR OXIDES: FUEL COMBUSTION

INTPODUCTION

This report contains a summary of each state's implementation plan regulations for sulfur oxides; a background section explaining the relationship between these regulations, the Federal ambient air standards, and Federal new source regulations; a comparative analysis of the various State regulations, and three appendices. Appendix A presents the National Ambient Air Quality Standards, Appendix B summarizes the Federal new source regulations for SO_2, and Appendix C explains how to convert units of measure of sulfur oxide regulations to a common basis.

Regulations aimed at controlling ambient air concentrations of sulfur dioxide (SO_2) may be written to limit either the sulfur content of fuel or the emission of sulfur dioxide or sulfur oxides. To be consistent with commonly used terminology, the following discussions refer to all sulfur limiting regulations as SO_2 regulations.

This document is <u>not</u> an official EPA listing of SIP emission regulations for SO_2, but reflects an interpretation of these regulations which was prepared by EPA's Strategies and Air Standards Division for strategy analysis. Since the primary responsibility for interpreting and enforcing these regulations lies with each state or local air pollution control office, these data should not be used to make assumptions regarding the legal compliance status of any particular facility.

The summary initially was compiled from State regulations published in the Environment Reporter and the Code of Federal Regulations. To verify details of how these regulations are being enforced, a team of engineers visited the Office of Enforcement or the Office of Air Programs at each EPA regional office. In some instances, the state air pollution control offices were contacted. Following these visits, the regulations have been updated by tracking revisions to State Implementation Plans which have been published in the Federal Register. This summary incorporates revisions that have been approved through February 7, 1976 and, in a few cases, identifies revisions which are in progress.

This summary provides a data base of SO_2 regulations for use by EPA and other organizations in analyzing the issues of SO_2 control and National fuels policies. Since these data were not collected directly from the individual state air pollution control agencies, there exists a possibility of errors in some of these summaries. To assist in correcting these errors and maintaining an accurate data base, the Strategies and Air Standards Division invites comments on this summary, especially from state air pollution control agencies and from EPA regional offices. Comments will be incorporated into revisions of this document which will be published periodically. The revisions will reflect changes to State Implementation Plans which have been approved by EPA since the publication of this document and will correct inaccuracies which may appear in this report. Please address comments to:

U. S. Environmental Protection Agency
Strategies and Air Standards Division
Energy Information Section (MD-12)
Research Triangle Park, North Carolina 27711

BACKGROUND: RELATIONSHIP OF NATIONAL AMBIENT AIR QUALITY STANDARDS, STATE EMISSION REGULATIONS, AND FEDERAL NEW SOURCE STANDARDS

The Clean Air Act of 1970 gave the Environmental Protection Agency (EPA) the responsibility and authority to control air pollution in the United States and its territories. Among other responsibilities, the Clean Air Act required the Administrator of EPA to promulgate National Ambient Air Quality Standards* for pollutants which he determines adversely affect public health and welfare. In 1971, EPA promulgated National Ambient Air Quality Standards (NAAQS) for six pollutants--sulfur dioxide, nitrogen dioxide, particulate matter, carbon monoxide, hydrocarbons, and photochemical oxidants (Appendix A). For each pollutant, two standards were issued. Primary standards were set at levels necessary to protect the public health and were to be met no later than three years from the date of promulgation (subject to limited extensions of up to three years). Secondary standards were designed to protect the public from adverse effects to their welfare, such as crop damage, reduction in atmospheric visibility, and corrosion of materials and were to be met in a time frame considered reasonable by the Administrator.

To implement these standards, the Act required each state to adopt and submit to EPA a plan for attaining, maintaining, and enforcing the National Ambient Air Quality Standards in all regions of the state. Each state, therefore, decided (for each pollutant) the total emission reduction needed to maintain local ambient air levels below the standards and decided which emission sources to control and to what extent. The State Implementation Plans (SIPs) prescribed emission limiting regulations, timetables for compliance with the limitation, and any other measures, such as land-use and transportation controls, which were necessary to insure attainment and maintenance of the standards. The plans were reviewed by EPA and approved if they demonstrated that at a minimum the primary standards would be attained within three years (subject to

---

* National Ambient Air Quality Standards (usually expressed in micrograms per cubic meter) establish a maximum level of pollution permitted in the ambient air.

the compliance date extension provisions of the Act) and that secondary standards would be attained within a reasonable period of time. Disapproved plans (or parts thereof) were returned to the States for revision, or in some cases, substitute regulations were promulgated by EPA.

While the primary responsibility for enforcing SIP regulations rests with the individual States, the Administrator of EPA is responsible for assuring that all implementation plan requirements are fulfilled. As a result, EPA provides technical and legal assistance to the States in enforcing SIP regulations. If any state fails to enforce its implementation plan regulations, the Federal Government may commence a number of administrative or legal actions directed toward non-complying sources.

Most of the State implementation plans were approved in 1972. Following initial approval of the SIPs, many states began submitting to EPA revisions to their implementation plan, many of which alter the emission limitations. Usually, these revisions are based on additional air quality measurement data or on a more detailed technical anlaysis of air pollution control strategies. When approved by EPA, these revisions become a part of the implementation plan.

In addition to the SIP limitations, emissions from certain sources are restricted further by Federal Standards of Performance for New Stationary Sources (commonly referred to as new source performance standards). A new emission source is one which is designed and constructed after the formal proposal of new source regulations. New sources include newly constructed facilities, new equipment which is added to existing facilities, and existing equipment which is modified in such a way that results in an increase of pollutant emissions. New source standards limit specific pollutant emissions from categories of sources (such as fossil fuel-fired steam generators, municipal incinerators) which the Administrator determines may contribute significantly to the endangerment of public health and welfare. For these sources, the Act requires the Administrator to promulgate emission limitations which will require installation of the best systems of emission reduction which he determines have been adequately demonstrated. Cost factors are considered in making this determination. Federal

new source standards help prevent the occurrence of new air pollution problems, encourage improvements in emission control technology, and provide a mechanism for controlling pollutants which EPA suspects are hazardous, but for which insufficient information is available to regulate such pollutants under other provisions of the Act.

Over the past few years, much attention has been focused on emission regulations for sulfur oxides since these regulations impact the supply of fuel, particularly coal, which can be burned to produce electrical energy. While United States supplies of coal are plentiful, some of this coal is too high in sulfur content to be burned in compliance with State and Federal regulations for SO_2 without the use of emission reduction systems, which, in some cases, are either costly or impractical. As a result, many states have been reevaluating their sulfur oxide regulations to insure that scarce low sulfur fuels are being required only in areas where they are needed to protect public health. In some cases, States have revised their sulfur regulations to allow the burning of higher sulfur fuels in less polluted areas where they can be burned without violating ambient air quality standards.

COMPARATIVE ANALYSIS OF SO_2 REGULATIONS

This summary of SIP emission requirements clearly shows the complexity and diversity of SO_2 emission regulations for fuel combustion. These regulations vary as to the units of measure in which the sulfur limiting provision is expressed and the equipment (boiler, stack, or entire plant) to which the regulations apply. In addition, some states control all emission sources equally, while other states prescribe different emission limits for sources according to the fuel used, the geographic location, the size of the source, or the type of source (e.g. power plant or other combustion units). The following discussion highlights the diversity of the regulations and explains some of the more peculiar and complex regulations.

Sulfur dioxide emissions most commonly are regulated either by limiting the amount of sulfur or sulfur dioxide emitted per unit heat input (#S/MMBtu, #SO_2/MMBtu) or by limiting the sulfur content by weight (%S) that a fuel can contain. Sulfur dioxide regulations also are written in parts of SO_2 per million parts by volume of stack gas (ppm SO_2) or limit the amount of SO_2 emitted per hour (#SO_2/hr). Six states, or parts thereof specify ambient air quality regulations only (i.e. no specific emission limit for a source). Other methods of limiting SO_2 emissions which appear in the SIPs include requiring a percent control of input sulfur (% control) and requiring application of "latest reasonably available control technology" (Florida) or "new proven technologies" (Texas).

Some of the above mentioned methods for regulating SO_2 control the emissions of sulfur oxides more directly than do others, and each method has different implications regarding fuels that legally can be burned. For instance, a %S regulation is a fuel restriction and, therefore, does not directly limit sulfur oxide emissions from a stack. To illustrate, a regulation requiring a coal-fired boiler to reduce its fuel sulfur from 3% to 1% may appear to result in a 67% reduction of SO_2 emissions. This assumption is valid only if the lower sulfur fuel used to comply with the regulation has the same heat content (Btu/lb) as the original fuel. If, however, the lower sulfur fuel has a lower heat content than the original fuel, then the rate of fuel consumption for the boiler will have to be increased to maintain the heat output at existing levels. As a result,

the emission reduction achieved by complying with this hypothetical regulation may be less than 67%. The degree less than 67% would depend upon the heating value of the complying coal. On the other hand, a regulation requiring a boiler to reduce emissions from 4.5 #SO_2/MMBtu to 1.5 #SO_2/MMBtu, in all cases, will result in a 67% reduction of SO_2 emissions because this emission rate takes into account the total heat generated by the boiler.

Regulations written in #SO_2/hour directly control the amount of sulfur emissions, but the sulfur content of fuel that can be used to comply with a SO_2/hr regulation is a function of other parameters in addition to the value of the regulation. For instance, consider a boiler operating at full capacity (i.e. maximum designed fuel consumption rate) and then at one-half of full capacity. In both cases, assume that the boiler is meeting the #SO_2/hr emission requirement. When operating at one-half of full capacity, the boiler legally can burn a fuel with twice the sulfur content that it can burn when operating at full capacity, because the rate of fuel consumption (and, thus, sulfur input to the boiler) has been reduced by one-half. Likewise, the fuel sulfur required to meet a regulation expressed in ppm SO_2 will vary depending on the amount of excess air (air injected during the combustion process) specified for computing the emission limit. For example, to comply with a regulation of 500 ppm SO_2 at 50% excess air would require a fuel with about 0.86 %S. But to comply with the same emission limit at 12% excess air would require a fuel with a sulfur content of about 0.65 %S.

On the other hand, the effect of ambient air quality regulations (on emissions), which have been approved in Arkansas, Missouri, Oklahoma, Texas, Wisconsin, and Wyoming is difficult to predict. These regulations were approved by EPA because no violations of the National Ambient Air Quality Standards had been measured in these areas and because the States anticipated no industrial growth which might result in contravention of the air standards. If, however, the state ambient air quality standard is violated in these areas, the regulations provide no direct legal mechanism for requiring a source to reduce SO_2 emission. To control a source once an air standard is violated, the state might exercise one of several enforcement actions, including fining the

source, issuing an enforcement order, or adopting a continuous emission limitation. If, however, a National Ambient Air Quality Standard (NAAQS) is violated, EPA would require the state to adopt and submit a State Implementation Plan revision, setting forth emission limitations aimed at preventing future NAAQS violations. Similarly, it is difficult to predict the impact of regulations in Texas and Florida which call for the use of reasonably available control technologies on certain sources.

To assist in comparing SO_2 regulations on a plant-by-plant basis, Appendix C contains equations for converting SO_2 emission regulations into common units of measure of %S and $\#SO_2$/MMBtu based on the heat content of the fuel burned and the excess air specified in the applicable regulation.

Besides the various units of measure employed, regulations also vary as to the equipment upon which the emission limit is enforced. Twenty-five states or territories enforce their regulations on a boiler basis, thirteen on a stack basis, and eighteen on a total plant basis (all boilers collectively). In considering compliance with a regulation, this information determines whether a source is allowed to average its emission over all boilers (or stacks) or if each boiler (or stack) must comply with the regulation.

About one-third of the states regulate specific fuel types. These regulations usually control oil-fired sources more strictly than coal-fired sources since, in general, oil contains less sulfur and has a higher heat content than does coal. But, in some cases, such as New Jersey, the sulfur restriction for coal is more stringent than the restriction for oil; the objective of this regulation being to prohibit the use of coal without flue gas cleaning equipment. The range of fuel types which are individually specified in the various regulations include oil, #1 to #6 oil individually, all distillate oils, all residual oils, coal, anthracite coal, bituminous coal, lignite, all solid fuels, all liquid fuels, gaseous fuels, fossil fuels, and non-commerical fuels. Consideration of these provisions is important in determining if a particular regulation applies to uncommon fuels such as petrochemical by-products or solid waste.

About half of the states have specific SO_2 regulations for various geographic areas within the state. These geographic areas might be specified as cities, counties, Federal air quality control regions (AQCR), Standard Metropolitan Statistical Areas (SMSA), or some locally defined geographic region. In some areas, including Arizona, New Mexico and Puerto Rico, regulations have been promulgated which apply to specific plants.

In about one-third of the states, the size of the source determines whether or not the source must comply with an SO_2 emission limitation and if so, the stringency of the limitation. In most cases, source size is defined by the heat input rate measured in millions of Btu per hour (MMBtu/hr). Other methods of defining source size include pounds of steam generated per hour (#steam/hr) and emission potential in tons of SO_2 emitted per year (tons SO_2/yr). In some states, the magnitude of the emission limit is determined by the heat input range under which a source falls. In these states, larger sources usually are controlled more stringently than smaller sources. For instance, in parts of Nevada, boilers with heat input rate of less than 250 MMBtu/hr must comply with an emission limit of 0.7 #S/MMBtu while boilers greater than 250 MMBtu/hr must comply with an emission limit of 0.1 #S/MMBtu (250 MMBtu/hr translates to a boiler with an associated generating capacity of about 25 megawatts). In Pennsylvania, West Virginia, Virginia, and Indiana the heat input rate is inserted into an equation which computes the allowable emission limit.

Over half of the states employ more than one of the parameters discussed above in their regulations. In addition, about 35% of the states have separate regulations for new sources and about 10% have regulations for existing sources that become more stringent over time. For example, in North Carolina all existing sources currently must comply with an emission limit of 2.3 #SO_2/MMBtu; after July 1, 1980, these sources can emit no more than 1.6 #SO_2/MMBtu.

In a few states (for instance, New Hampshire and parts of New York), the limits on emissions or fuel quality are specified as maximum values averaged over a given time period. Most regulations, however, state that emissions or

sulfur content shall not exceed a maximum value. This phraseology implies that instantaneous compliance with the limit is required.

SULFUR OXIDE EMISSION REGULATIONS

In the following summary of State Implementation Plan regulations for SO_2, one page has been devoted to each state regulation (two pages for Ohio where the summary was lengthy). The states and U. S. territories appear alphabetically with the state name on the top of each page. Under the name is a checklist for identifying the units of measure in which the emission limit is expressed and the equipment on which the regulation is enforced. Also presented is the time period over which emission measurements are averaged for determining compliance with the regulation. Below this information, the emission regulation is summarized. Where possible, the summaries were formatted similarly, but in each case a format was selected which was believed to be best suited for a lucid explanation of the regulation. Where needed for clarity, further explanatory information about the regulation is presented at the end of each summary in a paragraph entitled "NOTES."

In the past, other reports have presented SIP regulations in a tabular format, enabling easy comparison. In many cases, however, presenting regulations in this manner sacrifices some accuracy and detail. In contrast, this summary has been written in a freely-formatted style, thus portraying the regulations in greater detail than in other published summaries. As a result, this summary is lengthy, but is easily understood and will be easy to update.

This summary sometimes references regulations that have been "adopted" or "proposed." Proposed regulations refer to regulations adopted by a state or written by EPA which have been proposed formally in the Federal Register. Adopted regulations refer to the regulations that have been adopted by a State legislative body, but which either have not been submitted to EPA for approval or have been submitted to EPA but have not been proposed formally in the Federal Register.

The abbreviations listed below are used on the following pages in explaining SO_2 emission regulations.

AQCR - Air Quality Control Region
E - Allowable emissions
EPA - U. S. Environmental Protection Agency
FGD - Flue gas desulfurization
MMBtu - Million British thermal units
MW - Megawatts
NAAQS - National Ambient Air Quality Standard
ppm - Parts per million by volume
Q - Heat input rate (MMBtu/hr)
%S - Percent sulfur by weight
SCFM - Standard cubic feet per minute
SIP - State Implementation Plan
- Pounds

ALABAMA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

AQCR's 005, 007, and Jefferson County:	1.8#SO_2/MMBtu
AQCR's 001, 002, 003, 004, 006:	4.0#SO_2/MMBtu
Widows Creek:	1.2#SO_2/MMBtu

NOTE: Alabama has proposed the following revision to the regulation:

Counties of Jefferson, Jackson and Mobile	1.8#SO_2/MMBtu
All other counties	4.0#SO_2/MMBtu
Widows Creek	1.2#SO_2/MMBtu

ALASKA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel-burning Equipment — 500ppm SO_2

AMERICAN SAMOA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Any Fuel: 3.5% S

ARIZONA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- (xx)9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

C. The time period over which the emissions are to be averaged:

2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:	
1. Coal	1.0#SO_2/MMBtu
2. Oil	1.0#SO_2/MMBtu
3. Navajo Plant (Maximum emissions)[a]	21270#SO_2/hr
B. New Sources (constructed after 8/17/71):	
1. Coal	0.8#SO_2/MMBtu
2. Oil	0.8#SO_2/MMBtu

NOTE: [a]An individual boiler must not contribute more than one third of the total emissions. The compliance date for the Navajo Plant is 7/31/77.

ARKANSAS

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- (xx)8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

II. THE STATE IMPLEMENTATION PLAN REGULATION

Ambient Air Quality Standard (30 minute average): 0.2ppm SO_2

CALIFORNIA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.[a]
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- (xx)3. an individual stack.[a]

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Fuels:	
Great Basin Valleys Air Basin (AQCR 23)	2000ppm SO_2[a]
South Coast Air Basin (AQCR 24)	0.5% S
North Central Coast Air Basin (AQCR 25)	0.5% S
North Coast Air Basin (AQCR 26)	1000ppm SO_2[a]
Northeast Plateau Air Basin (AQCR 27)	
Lassen and Modoc Counties	0.5% S
Eastern Shasta County	1500ppm SO_2[a]
Siskiyou County	2000ppm SO_2[a]
Sacramento Valley Air Basin (AQCR 28)	
Tehama County	0.5% S
Plumas and western Shasta Counties	1000ppm SO_2[a]
Other Counties	2000ppm SO_2[a]
San Diego Air Basin (AQCR 29)	0.5% S
Bay Area Air Basin (AQCR 30)	300ppm SO_2[a]
San Joaquin Valley Air Basin (AQCR 31)	2000ppm SO_2[a]
South Central Coast Air Basin (AQCR 32)	0.5% S
Southeast Desert Air Basin (AQCR 33)	
Imperial, eastern Riverside, and northeastern San Bernadino Counties	0.5% S
Eastern San Diego County	500ppm SO_2[a]
Eastern Kern and northeastern Los Angeles Counties	2000ppm SO_2[a]

NOTE: [a]All emission regulations expressed as ppm SO_2 are corrected to 50% excess air.

COLORADO

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:	No emission limit
B. New Sources (constructed after 2/1/72):	
1. Emission Rate < 5 tons/day	150ppm SO_2
2. Uncontrolled Emission Rate > 5 tons/day	500ppm SO_2
3. Maximum Allowable Emission Rate	5 tons/day

NOTES: On March 13, 1975 the State adopted a revision to the SIP regulation which redefined a new source as one which is constructed after 1/1/80 (has not been approved by EPA).
A local regulation enforceable by the State limits emissions from existing sources to 500ppm SO_2.

CONNECTICUT

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Fuels:	
With Stack-gas Cleaning	0.5% S 0.55#SO_2/MMBtu

DELAWARE

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

1 month

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Distillate Oil:	0.3% S
B. Other Fuels:	
1. New Castle County (in AQCR 045)	1.0% S
2. Other Counties	No emission limit

DISTRICT OF COLUMBIA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Prior to 7/1/75:

1. Coal	1.0% S
2. Oil	1.0% S

B. After 7/1/75:

1. Coal	0.5% S
2. Oil	0.5% S

FLORIDA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:
Existing sources--no time interval specified
New sources--2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Q < 250MMBtu/hr:	"Latest reasonably available technology"
B. Q > 250MMBtu/hr:	
1. Existing sources (effective 7/1/75):	
Solid fuel	1.5#SO_2/MMBtu
Liquid fuel	1.1#SO_2/MMBtu
2. New sources (constructed after 1/18/72):	
Solid fuel	1.2#SO_2/MMBtu
Liquid fuel	0.8#SO_2/MMBtu

NOTES: Florida has proposed a revision to this regulation.
The heat input rate (Q) applies to an entire plant.

GEORGIA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:

1. Q < 100MMBtu/hr	2.5% S
2. Q > 100MMBtu/hr	3.0% S
3. Atkinson Plant (#2 distillate oil)	0.2% S

B. New Sources (constructed after 1/1/72):

1. Coal	1.2#SO_2/MMBtu
2. Oil	0.8#SO_2/MMBtu

NOTE: The heat input rate (Q) applies to an individual boiler.

GUAM

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Fuels: 0.80#SO_2/MMBtu

NOTE: A SIP revision has been proposed which would limit the sulfur content of fuels to 0.75% (has not been approved by EPA).

HAWAII

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- (xx) 1. %S for all fuels.
- ( ) 2. %S for each fuel.
- ( ) 3. lb $SO_2/10^6$ Btu for all fuels.
- ( ) 4. lb $SO_2/10^6$ Btu for each fuel.
- ( ) 5. lb $S/10^6$ Btu for all fuels.
- ( ) 6. lb $S/10^6$ Btu for each fuel.
- ( ) 7. ppm SO_2 in exhaust gas.
- ( ) 8. impact on ambient air quality in ppm.
- ( ) 9. lb SO_2/hr.

B. The regulation applies to:
- ( ) 1. an entire plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel-burning Equipment:

1. Q > 250MMBtu/hr (power generating output > 25MW)	0.5% S
2. Other Fuel-burning Equipment	2.0% S

NOTE: The heat input rate (Q) applies to an entire plant.

IDAHO

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Sulfur content in fuels:

1. Coal (effective 1/1/73)	1.0% S
2. Distillate Oil #1 (effective 1/31/73)	0.3% S
3. Distillate Oil #2 (effective 1/31/73)	0.5% S
4. Residual Oil #4-#6 (effective 1/31/74)	1.75% S

ILLINOIS

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

C. The time period over which the emissions are to be averaged:

1 hour

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources - Solid Fuels (effective 5/30/75)
1. Major Metropolitan Areas of Chicago (AQCR 67), St. Louis (AQCR 70), and Peoria (AQCR 65): 1.8#SO_2/MMBtu
2. If air quality monitoring in any other Major Metropolitan Area indicates SO_2 levels > 60μg/m³ (0.02ppm) for any year ending prior to 5/30/76, or levels > 45μg/m³ (0.015ppm) on or after 5/30/76, the allowable emission rate is: 1.8#SO_2/MMBtu
3. Other Areas: 6.0#SO_2/MMBtu

B. Existing Sources - Liquid Fuels
1. Residual Oil 1.0#SO_2/MMBtu
2. Distillate Oil 0.3#SO_2/MMBtu

C. New Sources (constructed after 4/14/72):

FUEL TYPE	HEAT INPUT (Q)	
	≤ 250MMBtu/hr	> 250MMBtu/hr
Solid Fuel	1.8#SO_2/MMBtu	1.2#SO_2/MMBtu
Residual Oil	1.0#SO_2/MMBtu	0.8#SO_2/MMBtu
Distillate Oil	0.3#SO_2/MMBtu	0.3#SO_2/MMBtu

NOTE: The heat input rate (Q) applies to an individual boiler.

INDIANA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. All Existing Equipment and New Equipment Q < 250MMBtu/hr:
The lesser of:
1. the 1-hour average ground level concentration not to exceed $200\mu g/m^3$
2. the emission rate where:
   - Q < 24MMBtu/hr — $6.0\#SO_2/MMBtu$
   - $24 \leq Q \leq 3081$MMBtu/hr — $17Q^{-0.33}\#SO_2/MMBtu$
   - Q > 3081MMBtu/hr — $1.2\#SO_2/MMBtu$

B. New Equipment Q > 250MMBtu/hr (constructed after 9/14/72):
1. Solid Fuel — $1.2\#SO_2/MMBtu$
2. Liquid Fuel — $0.8\#SO_2/MMBtu$

NOTES: Indiana has proposed a revision of this regulation.
The heat input rate (Q) applies to an entire plant.

IOWA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

C. The time period over which the emissions are to be averaged:

2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Solid Fuel-burning Installations (any combination of fuels):

1. Effective 1/1/74	6.0#SO_2/MMBtu
2. Effective 1/1/75	5.0#SO_2/MMBtu

B. Liquid Fuel-burning Installations: 2.5#SO_2/MMBtu

NOTE: A revision to alter the SIP compliance dates from the above to 7/31/75 and 7/31/78, respectively, has been proposed.

KANSAS

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- (xx)5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment:
1. If Q > 250MMBtu/hr and the equipment burns fuels other than natural gas for more than 2000 hrs/yr, and the yearly emission rate is ≥ 3 x (1971 emission rate), then, the allowable emission rate is: 1.5#S/MMBtu
2. Others: No emission limit

B. New Equipment (constructed or modified after 1/1/72):
1. Q < 250MMBtu/hr: No emission limit
2. Q ≥ 250MMBtu/hr: 1.5#S/MMBtu

NOTE: The heat input rate (Q) applies to an individual boiler.

KENTUCKY

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment:

Heat Input (MMBtu/hr)	Emission Rate (#SO_2/MMBtu)					
	Priority I (AQCR 78)		Priority II (AQCR's 72,77,79)		Priority III (AQCR's 101-105)	
	Liq.	Sol.	Liq.	Sol.	Liq.	Sol.
≤10	2.50	4.00	2.50	4.00	2.50	4.00
100	1.10	1.70	1.85	2.60	2.30	3.70
150	0.95	1.40	1.75	2.40	2.28	3.70
250	0.80	1.20	1.65	2.30	2.24	3.60
500	0.80	1.20	1.50	2.00	2.20	3.60
1,000	0.80	1.20	1.50	2.00	2.17	3.50
>10,000	0.80	1.20	1.50	2.00	2.00	3.50

B. New Installation (constructed after 4/9/72):

Heat Input (MMBtu/hr)	Emission Rate (#SO_2/MMBtu)	
	Liquid	Solid
≤10	2.50	4.00
50	1.40	2.40
100	1.10	1.70
150	0.95	1.40
200	0.86	1.30
≥250	0.80	1.20

NOTES: 1. The heat input rate applies to the entire plant.
2. Kentucky has proposed a revision to this regulation.

LOUISIANA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Existing Sources — 2000ppm SO_2

MAINE

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- (xx) 1. %S for all fuels.
- ( ) 2. %S for each fuel.
- ( ) 3. lb $SO_2/10^6$ Btu for all fuels.
- ( ) 4. lb $SO_2/10^6$ Btu for each fuel.
- ( ) 5. lb $S/10^6$ Btu for all fuels.
- ( ) 6. lb $S/10^6$ Btu for each fuel.
- ( ) 7. ppm SO_2 in exhaust gas.
- ( ) 8. impact on ambient air quality in ppm.
- ( ) 9. lb SO_2/hr.

B. The regulation applies to:
- (xx) 1. an entire plant.
- ( ) 2. an individual boiler.
- ( ) 3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Fuels:

1. Metropolitan Portland (AQCR 110)	1.5% S
2. Other Areas (AQCR's 107, 108, 109, 111)	2.5% S

NOTES: A source shall be exempted from this regulation if a sulfur collecting device is installed to reduce SO_2 emission to the level equivalent to burning 1.5% S fuel.

Maine has proposed a revision to the regulation for the Metropolitan Portland AQCR.

MARYLAND

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Solid Fuels, Q > 100MMBtu/hr:	1.0% S
B. Residual Oil (effective 11/26/75):	1.0% S
C. Distillate Oil (effective 7/1/72):	0.3% S

NOTES: The heat input rate (Q) applies to an entire plant.
Maryland has proposed a revision to this regulation.

MASSACHUSETTS

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- (xx)6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Coal or Residual Oil:

1. In Metropolitan Boston Air Pollution Control District of AQCR 119 (the cities and towns of Arlington, Belmont, Boston, Brookline, Cambridge, Chelsea, Everett, Malden, Medford, Newton, Somerville, Waltham or Watertown	
Heat input > 2500MMBtu/hr	0.55#S/MMBtu
Heat input ≤ 2500MMBtu/hr	0.28#S/MMBtu
2. Other Areas in Metropolitan Boston AQCR (AQCR 119) but not in the cities and towns listed above	
Heat input > 100MMBtu/hr	1.21#S/MMBtu
3. All Other Areas in Massachusetts	0.55#S/MMBtu

B. #2 Fuel Oil: 0.17#S/MMBtu

NOTES: A regulation for Berkshire (in AQCR 117) limiting the sulfur content of coal on residual oil to 2.2% has been passed by the State (has not been approved by EPA).
The heat input rate (Q) applies to an entire plant.

MICHIGAN

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Solid or Liquid Fuels:

1. Effective 7/1/75:

Plant Capacity ≤ 500,000 lb. steam/hr	2.0% S
Plant Capacity > 500,000 lb. steam/hr	1.5% S

2. Effective 7/1/78:

Plant Capacity ≤ 500,000 lb. steam/hr	1.5% S
Plant Capacity > 500,000 lb. steam/hr	1.0% S

3. Wayne County (in AQCR 123):

FUEL TYPE	EFFECTIVE DATE		
	8/1/74	8/1/75	8/1/76
Pulverized Coal	1.5% S	1.25% S	1.0% S
Other Coal	0.5% S	0.5% S	0.5% S
#1 and #2 Oil	0.3% S	0.3% S	0.3% S
#4, #5 and #6 Oil	0.7% S	0.7% S	0.7% S

NOTE: In areas other than Wayne County, compliance date extensions to 1/1/80 may be granted if the NAAQS is not being violated in the vicinity of a plant. To date, extensions have been approved for the Campbell, Monroe, and Harbor Beach plants.

MINNESOTA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- (xx) 1. %S for all fuels.
- ( ) 2. %S for each fuel.
- ( ) 3. lb $SO_2/10^6$ Btu for all fuels.
- ( ) 4. lb $SO_2/10^6$ Btu for each fuel.
- ( ) 5. lb $S/10^6$ Btu for all fuels.
- ( ) 6. lb $S/10^6$ Btu for each fuel.
- ( ) 7. ppm SO_2 in exhaust gas.
- ( ) 8. impact on ambient air quality in ppm.
- ( ) 9. lb SO_2/hr.

B. The regulation applies to:
- ( ) 1. an entire plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Minneapolis-St. Paul AQCR (131):

Fossil Fuels	
Q < 250MMBtu/hr	2.0% S
Q > 250MMBtu/hr	1.5% S

B. Other Areas (AQCR's 127, 128, 129, 130, 132, 133):

1. Q < 250MMBtu/hr	No emission limit
2. Q > 250MMBtu/hr	2.0% S

NOTE: The heat input rate (Q) applies to an entire plant.

MISSISSIPPI

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. All Fuel-burning Installations: 4.8#SO_2/MMBtu

B. Units constructed or modified after 1/28/72 with generating capacity < 250MMBtu/hr: 2.4#SO_2/MMBtu

NOTE: No increase in the emission rate from that of 1970 is permitted unless authorized by the State Commission.

MISSOURI

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- (xx)8. impact on ambient air quality in ppm.
- (xx)9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Sources:

1. Maximum allowable emission rate[a]	1000#SO_2/hr
2. St. Louis AQCR (070):	
Q > 2000MMBtu/hr	2.3#SO_2/MMBtu
Q < 2000MMBtu/hr	2.0% S

NOTES: [a]This regulation applies only when emissions cause or contribute to ambient air concentrations exceeding 0.25ppm (maximum 1 hour average) once in any 4 days or 0.07ppm (maximum 24 hour average) once in any 90 day period. As of 6/75, no violations have occurred.
The heat input rate (Q) applies to an entire plant.

MONTANA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- (xx)5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Liquid or Solid Fuels	1.0#S/MMBtu

NEBRASKA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

Existing Fossil Fuel-burning Equipment	2.5#SO_2/MMBtu

NEVADA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- (xx) 1. %S for all fuels.
- (xx) 2. %S for each fuel.
- (xx) 3. lb $SO_2/10^6$ Btu for all fuels.
- ( ) 4. lb $SO_2/10^6$ Btu for each fuel.
- (xx) 5. lb $S/10^6$ Btu for all fuels.
- ( ) 6. lb $S/10^6$ Btu for each fuel.
- ( ) 7. ppm SO_2 in exhaust gas.
- ( ) 8. impact on ambient air quality in ppm.
- ( ) 9. lb SO_2/hr.

B. The regulation applies to:
- ( ) 1. an entire plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Fuel-burning Equipment:	
Q ≤ 250MMBtu/hr	0.7#S/MMBtu
Q > 250MMBtu/hr	0.105#S/MMBtu
B. Clark County[a] (in AQCR 013):	
Fuel-burning Equipment	0.15#SO_2/MMBtu
Fuel Oil	1.0% S
C. Washoe County (in AQCR 148):	
Fuel-burning Equipment	
Q < 250MMBtu/hr	1.0% S
Q > 250MMBtu/hr	0.105#S/MMBtu
D. Regulations Adopted by the State (submitted to EPA but not yet approved as part of SIP):	
Fuel-burning Equipment	
Q < 250MMBtu/hr	0.7#S/MMBtu
250 < Q < 5000MMBtu/hr	0.4#S/MMBtu
Q > 5000MMBtu/hr	0.105#S/MMBtu

NOTES: [a]Nevada has suspended this regulation for plants larger than 1000MW (has not been approved by EPA).
The heat input rate (Q) applies to an entire plant.

NEW HAMPSHIRE

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- (xx)6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:
Coal fuel--3 months
Other fuel--no time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Installations:

1. Coal	
Maximum emission	2.8#S/MMBtu
Maximum 3-month average	2.0#S/MMBtu
2. Oil	
#2	0.4% S
#4	1.0% S
#5 and #6	
Androscoggin AQCR (107)	2.2% S
Other areas	1.5% S

B. New Installations (constructed after 4/15/70):

1. Coal	
Maximum emission	1.5#S/MMBtu
Maximum 3-month average	1.0#S/MMBtu

2. Oil
The regulations for new oil-fired installations are identical to those applicable to existing oil-fired installations.

NEW JERSEY

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Coal:	
1. Counties of Atlantic, Cape May, Cumberland, Hunterdon, Ocean, Sussex and Warren (effective 5/6/68)	
Bituminous[a]	1.0% S
With FGD and State approval	1.5#SO_2/MMBtu
Anthracite	0.7% S
With FGD and State approval	1.0#SO_2/MMBtu
2. Other Areas:	
Effective 5/6/68[a]	Above Regulations Apply
Effective 10/1/71[b]	
Bituminous	0.2% S (dry basis)
Anthracite	0.2% S (dry basis)
B. Oil[c]:	
#2 and lighter	0.2% S
#4	0.3% S
#5, #6, and heavier	0.3% S
C. Non-Commercial Fuel (corrected to 12% CO_2 by volume):	640ppm SO_2
D. Mixtures of Commercial and Non-Commercial Fuels (corrected to 12% CO_2 by volume):	310ppm SO_2

NOTES: [a]If it is demonstrated that a facility cannot burn bituminous coal with a sulfur content $\leq$ 1.0%, then the State may authorize a less restrictive regulation (in no case > 1.5% S).

[b]If emissions are controlled to $\leq$ 0.30#SO_2/MMBtu, or if Equipment (rated capacity $\geq$ 2000MMBtu/hr for a facility or 450MMBtu/hr for a group of facilities) was in existence in 5/6/68, then the State may authorize the use of 1.0% S Bituminous or 0.7% S Anthracite Coal.

[c]Not applicable for #4, #5, and #6 oils if emissions $\leq$ 0.3#SO_2/MMBtu.

NEW MEXICO

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- (xx)9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Coal Burning Equipment (Q > 250MMBtu/hr):

1. Existing Equipment:	
AQCR 012	1.0#SO_2/MMBtu
AQCR 014 (except San Juan and Four Corners Plants)	0.34#SO_2/MMBtu
Other Areas	No emission limit
2. Four Corners Plant[a] (maximum allowable emission rate for entire plant):	19680#SO_2/hr
3. San Juan Plant[b] (maximum allowable emission rate):	3040#SO_2/hr
4. New Equipment (construction commenced after 9/1/71)	0.34#SO_2/MMBtu

B. Oil Burning Equipment (Q > 114.16MMBtu/hr): 0.34#SO_2/MMBtu

NOTES: New Mexico is considering a revision of this regulation.
The compliance date for the Four Corners and San Juan Plants is 7/31/77.
[a]Unit specific regulations for the Four Corners Plant:

UNIT	1	2	3	4	5
Allowable Emission Rate (#SO_2/hr)	0.084E	0.084E	0.108E	0.362E	0.362E

WHERE: E = 13850 x (% S in fuel)

[b]Applies only to unit #2 of the San Juan Plant
The heat input rate (Q) applies to an individual boiler.

NEW YORK

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. New York City (Bronx, Kings, Queens, New York, and Richmond Counties):	
1. Solid Fuel	0.2#S/MMBtu
2. Distillate Oil	0.2% S
3. Other Oils	0.3% S
B. Nassau, Rockland and Westchester Counties:	
1. Solid Fuel	0.2#S/MMBtu
2. Oil	0.37% S
C. In Sulfolk County, the towns of Babylon, Brookhaven, Huntington, Islip and Smithtown:	
1. Solid Fuel	0.6#S/MMBtu
2. Oil	1.0% S
D. Erie and Niagara Counties:	
1. Solid Fuel	
Maximum	1.7#S/MMBtu
Maximum 3-month average	1.4#S/MMBtu
2. Oil	
Effective 9/26/74	2.2% S
Effective 10/1/75	1.1% S
E. Other Areas:	
1. Solid Fuel	
Maximum	2.5#S/MMBtu
Maximum 3-month average	1.9#S/MMBtu
2. Oil	2.0% S

NOTE: For plants converting from oil or gas to coal, the maximum allowable emission rate in #S/MMBtu is the product of 0.55 and (maximum allowable % S for oil).

NORTH CAROLINA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources	2.3#SO_2/MMBtu
B. New Sources (constructed after 7/1/71)	1.6#SO_2/MMBtu
C. All Sources after 7/1/80	1.6#SO_2/MMBtu

NORTH DAKOTA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel-burning Installations	3.0#SO_2/MMBtu

OHIO

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Existing Sources in the Counties of:	
Muskingum, Clermont	0.6#SO_2/MMBtu
Ashtabula, Greene, Richland	1.2#SO_2/MMBtu
Allen, Ottawa, Stark, Wood	1.6#SO_2/MMBtu
Adams	2.0#SO_2/MMBtu
Franklin, Washington, Morgan	2.4#SO_2/MMBtu
Miami, Wayne	2.8#SO_2/MMBtu
Athens, Seneca, Tuscarawas, Licking, Hancock	3.2#SO_2/MMBtu
Henry, Vinton	3.5#SO_2/MMBtu
Erie, Knox, Scioto, Marion, Coshocton	4.0#SO_2/MMBtu
Columbiana, Gallia, Lawrence	4.4#SO_2/MMBtu
Auglaize, Huron	4.8#SO_2/MMBtu
Clark, Pike, Ross	5.2#SO_2/MMBtu
Fairfield, Hocking, Portage, Mercer	5.6#SO_2/MMBtu
Delaware, Pickway	6.0#SO_2/MMBtu
Crawford	6.8#SO_2/MMBtu

Continued

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Existing Sources in the Counties of:	
Hamilton, Butler:	
Q < 50MMBtu/hr	2.4#SO_2/MMBtu
50 ≤ Q ≤ 1500MMBtu/hr	$E=5.33Q^{-0.204}$
Q > 1500MMBtu/hr	1.2#SO_2/MMBtu
Montgomery:	
Q < 50MMBtu/hr	3.0#SO_2/MMBtu
50 ≤ Q ≤ 1500MMBtu/hr	$E=6.18Q^{-0.185}$
Q > 1500MMBtu/hr	1.6#SO_2/MMBtu
Trumbull, Mahoning, Jefferson*, Belmont, Lorain, Cuyahoga, Lake*, Summit, Lucas:	
Q < 22.5MMBtu/hr	6.0#SO_2/MMBtu
22.5 ≤ Q ≤ 3000MMBtu/hr	$E=16.71Q^{-0.329}$
Q > 3000MMBtu/hr	1.2#SO_2/MMBtu
*Painesville Plant (Lake County)	1.6#SO_2/MMBtu
*W. H. Sammis Plant (Jefferson County)	0.9#SO_2/MMBtu
*Tidd Plant (Jefferson County)	0.8#SO_2/MMBtu
All other counties	No emission limit

NOTES: Currently, Ohio has no enforceable regulations for sulfur dioxide emissions. The regulations summarized above were prepared by EPA and proposed in the Federal Register in November 1975. Regulations for Ohio will be promulgated following public hearings on EPA's proposal.
The heat input rate (Q) applies to all boilers connected to a common stack.

OKLAHOMA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- (xx)8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:
Existing sources--no time interval specified
New sources--2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment:

1. Maximum emission for any 5 minute period	0.52ppm SO_2
2. Maximum 1-hour average	0.46ppm SO_2
3. Maximum 3-hour average	0.25ppm SO_2
4. Maximum 24-hour average	0.05ppm SO_2

NOTE: A regulation enforceable by the State (not a part of the SIP) limits allowable emissions from new equipment:

1. Solid Fuel (effective 7/1/72)	2.0#SO_2/MMBtu
2. Liquid Fuel	
Effective 1/23/72	0.8#SO_2/MMBtu
Effective 7/1/75	0.3#SO_2/MMBtu
3. Gas Fuel (effective 7/1/72)	0.2#SO_2/MMBtu

OREGON

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:
New sources--2 hours
Others--no time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:	
1. Portland Interstate (AQCR 193):	1000ppm SO_2
2. Other Areas (AQCR's 190, 191, 192, 194):	
a) Coal (effective 7/1/72)	1.0% S
b) Residual Oil (effective 7/1/74)	1.75% S
c) #1 Distillate Oil (effective 7/1/74)	0.3% S
d) #2 Distillate Oil (effective 7/1/74)	0.5% S
B. New Sources (constructed or modified after 1/1/72):	
1. Solid Fuel	
150 < Q < 250MMBtu/hr	1.6#SO_2/MMBtu
Q > 250MMBtu/hr	1.2#SO_2/MMBtu
2. Liquid Fuel	
150 < Q < 250MMBtu/hr	1.4#SO_2/MMBtu
Q > 250MMBtu/hr	0.8#SO_2/MMBtu

NOTE: The heat input rate (Q) applies to an individual boiler.

PENNSYLVANIA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. City of Philadelphia:	
All fuels (effective 11/1/75)	0.3% S
B. Beaver Valley, Monongahela Valley, and Southeast Pennsylvania Air Basins, and Allegheny County:	
$2.5 < Q < 50$MMBtu/hr	1.0#SO_2/MMBtu
$50 < Q < 2000$MMBtu/hr	$1.70^{-0.14}$#SO_2/MMBtu
$Q \geq 2000$MMBtu/hr	0.6#SO_2/MMBtu
C. Other Air Basins:	
$2.5 < Q < 50$MMBtu/hr	3.0#SO_2/MMBtu
$50 < Q < 2000$MMBtu/hr	$5.10^{-0.14}$#SO_2/MMBtu
$Q \geq 2000$MMBtu/hr	1.8#SO_2/MMBtu
D. Other Areas:	4.0#SO_2/MMBtu

NOTE: The heat input rate (Q) applies to an individual boiler.

PUERTO RICO

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. All Fuels:	
Q < 8MMBtu/hr	2.5% S
Q > 8MMBtu/hr	3.1% S
B. Palo Seco Plant:	
1 and 2/unit	2.5% S
G-1, G-2, G-3	0.5% S
J-1, J-2	0.15% S
C. San Juan Plant:	
1 and 2/unit	1.5% S
J-1, J-2	0.15% S
D. South Coast Plant	
1 and 2/unit	1.0% S
P-1	0.5% S
J-1	0.15% S

NOTE: This regulation became effective 10/14/75.

RHODE ISLAND

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- (xx)5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Fuels:	0.55#S/MMBtu
With stack-gas cleaning and State approval	1.1#SO_2/MMBtu

SOUTH CAROLINA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Class I Counties - Charleston	
$Q \leq$ 10MMBtu/hr	3.5#SO_2/MMBtu
$Q >$ 10MMBtu/hr	2.3#SO_2/MMBtu
B. Class II Counties - Aiken and Anderson	
$Q \leq$ 1000MMBtu/hr	3.5#SO_2/MMBtu
$Q >$ 1000MMBtu/hr	2.3#SO_2/MMBtu
C. Class III Counties - All Others	
All Fuel-burning Sources	3.5#SO_2/MMBtu

NOTE: The heat input rate (Q) applies to an entire plant.

SOUTH DAKOTA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel-burning Installations	3.0#SO_2/MMBtu

TENNESSEE

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Installations (effective 7/1/75):

1. Class I Counties:	
Polk, Maury, Sullivan	1.6#SO_2/MMBtu
Roane: Q < 1000MMBtu/hr	1.6#SO_2/MMBtu
Q > 1000MMBtu/hr	1.2#SO_2/MMBtu
2. Class II Counties:	
Humphreys: Q < 1000MMBtu/hr	3.0#SO_2/MMBtu
Q > 1000MMBtu/hr	1.2#SO_2/MMBtu
3. Class III Counties - All Others	4.0#SO_2/MMBtu

B. New Installations Constructed After 4/3/72:

1. Q < 250MMBtu/hr	Above Regulations Apply
2. Q $\geq$ 250MMBtu/hr:	
Solid Fuel	1.2#SO_2/MMBtu
Liquid Fuel	0.8#SO_2/MMBtu

NOTES:
1. Existing installations with rated capacity > 1000MMBtu/hr may not:
   a. cause NAAQS violations.
   b. contribute $\geq$ 50% of the ambient air concentrations of SO_2.
   c. cause ambient SO_2 concentrations in excess of those existing in 1972; installations beginning operation after 1/1/72 must not cause concentrations above those existing during the first year of operation.
2. Tennessee has proposed a revision to this regulation.
3. The heat input rate (Q) applies to an entire plant.

TEXAS

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- (xx)8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Ambient Air Quality Standards:

1. Land Use Areas A, B, and D:	
Maximum 30-minute average[a]	0.4ppm SO_2
Maximum 24-hour average	0.2ppm SO_2
2. Land Use Area C:	
Maximum 30-minute average[a]	0.5ppm SO_2
Maximum 24-hour average	0.3ppm SO_2

B. Maximum allowable emission rate for AQCR's 106, 153, 210, 211, 214, 216, and 218:

1. Solid Fossil Fuel-fired Steam Generator[b]	3.0#SO_2/MMBtu
2. Liquid Fossil Fuel-fired Steam Generator, Furnace, or Heater[c]	440ppm SO_2

C. Galveston and Harris Counties (in AQCR 216):

Maximum permissiable ground level concentration (30-minute average):	0.28ppm SO_2

D. Jefferson and Orange Counties (in AQCR 106)

Maximum permissable ground level concentration (30-minute average):	0.40ppm SO_2

NOTES: [a]This limit shall not be exceeded more than once in any 12 hour period.
[b]New proven technology must be applied in removing SO_2.
[c]The standard effective stack height (ft.) can be calculated from: 0.49 x (stack effluent flow rate in SCFM)$^{0.50}$. If the effective stack height is less than the standard stack height, the allowable emission concentration must be multiplied by:

(effective stack height/standard stack height)^2

UTAH

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Installations:	
1. Coal	1.0% S
2. Oil	1.5% S
B. New Installations with Uncontrolled SO_2 Emission > 250tons/yr	80% Control of Input Sulfur

NOTES: With FGD and State approval, fuel of higher sulfur content may be used. The requirement stated in B above was deleted in the State Regulation 7/9/75. This change has not been submitted to EPA for approval.

VERMONT

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Fuels (effective 10/1/74): 1.0% S

NOTE: A change to permit 2.0% sulfur fuel has been proposed and submitted to the EPA for approval.

VIRGIN ISLANDS

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Emission Limits	
1. Coal	No emission limit
2. Oil	0.5% S

NOTE: A change to allow oil sulfur contents of 1.5% for existing plants and 0.7% S for new plants has been proposed.

VIRGINIA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- (xx)9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Combustion Installations	
1. General Regulation	2.64K #SO_2/hr
2. By Discretion of Virginia Air Pollution Control Board, Installations in Regions not Meeting NAAQS:	1.58K or 1.06K
3. The Virginia portion of AQCR 047 (National Capital Interstate)	1.06K #SO_2/hr

NOTES: K is the total rated capacity of the plant in 10^6Btu/hr.
As of June 1975, no installations were restricted to the 1.06K #SO_2/hr regulation reported in section 2 above.

WASHINGTON

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources	2000ppm SO_2
Effective 7/1/75	1000ppm SO_2
B. New Sources (constructed or modified after 10/5/73)	1000ppm SO_2
C. Northwest Air Pollution Control Authority (Whatcom, Skagit, San Juan, and Island Counties)	1.5#SO_2/MMBtu

NOTE: Emissions are to be corrected to 7% oxygen (dry basis) in exhaust gas.

WEST VIRGINIA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- (xx)9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. EPA Priority I[a] and II[b] Regions:

1. Electric Power Plants:	
Effective 6/30/75	2.7K #SO_2/hr
Effective 6/30/78	2.0K #SO_2/hr
2. Other Combustion Units:	
Effective 6/30/75	3.1K #SO_2/hr
Effective 6/30/78	2.3K #SO_2/hr

B. EPA Priority III[d] Regions (Except State Regions IV):

1. All Plants (effective 6/30/75)	3.2K #SO_2/hr
2. Power Plants (effective 6/30/78)	2.0K #SO_2/hr
3. Others (effective 6/30/78)	2.3K #SO_2/hr

C. State Region IV[c]:

1. Electric Power Plants	1.6K #SO_2/hr
Max emission from all stacks	45,000#SO_2/hr
2. Other Combustion Units	1.6K #SO_2/hr
Max emission from all stacks	5,500#SO_2/hr

NOTES: K is the total design heat input for the plant in 10^6Btu/hr.
The emission rate for an individual stack must not exceed 125% of the emission rate determined by prorating the total allowable emission rate among all stacks.

[a]Priority I Regions: Brooke, Hancock, Marshall, Ohio, Grant, and Mineral Counties

[b]Priority II Regions: Jackson, Pleasants, Tyler, Wetzel, and Wood Counties

[c]State Region IV: Counties of Kanawha and Putnam, and Magesterial Districts of Falls and Kanawha in Fayette County.

[d]EPA Priority III Regions: All other areas.

WISCONSIN

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:	No emission limit
B. New or Modified (after 4/1/72) fossil fuel fired steam generators (Q > 250MMBtu/hr):	
1. Solid Fuel	1.2#SO_2/MMBtu
2. Liquid Fuel	0.8#SO_2/MMBtu

NOTE: The heat input rate (Q) applies to an individual boiler.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- (xx)8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

II. THE STATE IMPLEMENTATION PLAN REGULATION

Ambient Air Quality Standard:

1. Maximum 3-hour average	0.5ppm SO_2
2. Maximum 24-hour average (not to be exceeded more than once per year)	0.1ppm SO_2
3. Annual mean	0.023ppm SO_2

NOTES: Regulations adopted by the state (have not been submitted to EPA for approval):

1. Existing Sources:

Coal	
250 < Q < 2500MMBtu/hr	1.2#SO_2/MMBtu
2500 < Q < 5000MMBtu/hr	0.5#SO_2/MMBtu
Q > 5000MMBtu/hr	0.3#SO_2/MMBtu
Oil	No emission limit

2. New Sources (Constructed after 1/1/74):

Coal	0.2#SO_2/MMBtu
Oil	0.8#SO_2/MMBtu

The heat input rate (Q) applies to an individual boiler.

Appendix A

NATIONAL AMBIENT AIR QUALITY STANDARDS

SUMMARY OF NATIONAL AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING TIME	PRIMARY STANDARDS	SECONDARY STANDARDS	FEDERAL REFERENCE METHOD (FRM)	COMMENTS
PARTICULATE MATTER	Annual (Geometric Mean) 24 - Hour*	75 $\mu g/m^3$ 260 $\mu g/m^3$	60 $\mu g/m^3$ 150 $\mu g/m^3$	Hi-Volume Sampler	The secondary annual standard (60$\mu g/m^3$) is a guide for assessing SIPs to achieve the 24-hour secondary standard.
SULFUR OXIDES	Annual (Arithmetic Mean) 24 - Hour* 3 - Hour*	80 $\mu g/m^3$ (0.03ppm) 365 $\mu g/m^3$ (0.14ppm) ——	—— —— 1300 $\mu g/m^3$ (0.5ppm)	Pararosaniline	
CO	8 - Hour* 1 - Hour*	10 mg/m^3 (9ppm) 40 mg/m^3 (35ppm)	(Same as Primary)	Non-Dispersive Infrared Spectrometry	
NO_2	Annual (Arithmetic Mean)	100 $\mu g/m^3$ (0.05ppm)	(Same as Primary)	Jacobs-Hochheiser (Rescinded)	The continuous Saltzman, Sodium Arsenite (Christie), TGS, and Chemiluminescence have been proposed as replacements for the J-H method. New FRM to be decided upon by Jan. 1975.
PHOTOCHEMICAL OXIDANTS	1 - Hour*	160 $\mu g/m^3$ (0.08ppm)	(Same as Primary)	Chemilumines-cence	The FRM measures O_3 (ozone)
HYDROCARBONS (Non-Methane)	3 - Hour* (6 to 9 a.m.)	160 $\mu g/m^3$ (0.24ppm)	(Same as Primary)	Flame Ionization	The HC standard is a guide to devising SIPs to achieve the Oxidant standard. The HC standard does not have to be met if the oxidant standard is met.

*Not to be exceeded more than once per year.

NOTE: The air quality standards and a description of the reference methods were published on April 30, 1971 in 42 CFR 410, recodified to 40 CFR 50 on November 25, 1972.

January 30, 1974 - JDC

A-2
410

Appendix B

NEW SOURCE PERFORMANCE STANDARDS FOR SO2

STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

SULFUR DIOXIDE EMISSIONS

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

B. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

C. The time period over which the emissions are to be averaged:

Continuous (See note)

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fossil-Fuel Fired Steam Generating Units
(Constructed or modified after August 17, 1971
with Q > 250 MMBtu/hr):

1. Solid fuel	1.2#SO_2/MMBtu
2. Liquid fuel	0.8#SO_2/MMBtu

NOTES: 1. Emission sources are required to pass an initial performance test, after which sources must continuously monitor SO_2 emissions or fuel sulfur content and report to EPA periods of excess emissions.
2. The heat input rate (Q) applies to an individual boiler.

Appendix C

CONVERSION FACTORS FOR SO2 EMISSION REGULATIONS

CONVERSION FACTORS FOR SO_2 EMISSION REGULATIONS

The following equations can be used to convert the units of measure of sulfur oxide emission regulations to %S and #SO_2/MMBtu.

Nomenclature:

A	SIP value in given units
H	Heat Content of fuel in units reported in Form 67 (Btu/# for coal, Btu/gal for oil)
R	Emission Rate of sulfur dioxide in units of #SO_2/MMBtu
S	Sulfur Content of the fuel in units of %S
X	Excess air in units of % excess
Q	Heat Input Rate to equipment on which regulation applies in units of MMBtu/hr

Computation:

Units of A	S (%S)	R (#SO_2/MMBtu)
%S		
Coal	A	2×10^4 A/H
Oil	A	1.58×10^5 A/H
#SO_2/MMBtu		
Coal	5×10^{-5} AH	A
Oil	6.35×10^{-6} AH	A
#S/MMBtu		
Coal	1×10^{-4} AH	2A
Oil	1.27×10^{-5} AH	2A
ppm SO_2 (assuming the value of X is available)		
Coal	$(1.16 \times 10^{-3} + 1.11 \times 10^{-5}X)A$	$(23.3 + 2.22 \times 10^{-1}X)A/H$
Oil	$(1.56 \times 10^{-3} + 1.48 \times 10^{-5}X)A$	$(2.46 \times 10^{2} + 2.33X)A/H$
ppm SO_2 (assuming X = 50%)		
Coal	1.72×10^{-3} A	34.4 A/H
Oil	2.30×10^{-3} A	3.63×10^{2} A/H
#SO_2/hr		
Coal	5×10^{-5} AH/Q	A/Q
Oil	6.35×10^{-6} AH/Q	A/Q